



A Case Report of Cerebral Toxoplasmosis in An HIV-Positive Patient: Risk of Possible Transmission through Contaminated Water/Food

S. Boughattas¹, R. Someeh², V. Ajamein^{2,3}, M. Sadighi⁴, J. Namrodi³, M. Moghateli^{2,3*}✉

1. Research Unity of Genetic (02/UR/08-03), Laboratory of Histology and Cytogenetic, Faculty of Medicine, Monastir, Tunisia

2. Research Center for Food Hygiene and Safety, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

3. Department of Parasitology and Mycology, Faculty of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

4. Department of General Practitioner, School of Medicine, Jundishapur University of Medical Sciences, Ahvaz, Iran

HIGHLIGHTS

- One of the most important opportunistic diseases for HIV/AIDS patients is toxoplasmosis.
- Latent toxoplasmosis in HIV/AIDS patients can be resulted in cerebral toxoplasmosis.
- People should be educated about possible transmission risk of *Toxoplasma gondii* through contaminated water/food.

Article type

Case report

Keywords

Toxoplasmosis
HIV
Public Health
Food Safety

Article history

Received: 25 Jul 2016

Revised: 20 Sep 2016

Accepted: 14 Oct 2016

Acronyms and abbreviations

MRI=Magnetic Resonance Imaging

ABSTRACT

Introduction: *Toxoplasma gondii* is an obligatory intracellular protozoan with a world-wide distribution. We reported here the cerebral toxoplasmosis in an Iranian HIV-positive patient.

Case report: A 35-year-old woman that hospitalized at Golestan province, in summer 2016 because of dizziness, fever, and headache. After treatment, she showed severe pain and then paralysis symptoms. Magnetic resonance imaging revealed a small mass in the brain. In the previous analysis, she had shown the presence of HIV antigen using immunocytochemistry. The results of serological tests for toxoplasmosis showed toxoplasma IgG antibodies rate of 1785.6 mg/dl and toxoplasma IgM antibodies rate of 162.4 IU/ml.

Conclusion: From public health importance viewpoint, it is a necessity to educate the people about possible transmission risk of *T. gondii* through contaminated food and drink sources. Unhygienic behaviors such as close contact with stray cats and also consumption of raw or semi-cooked meat must be avoided especially in case of immunosuppressed persons such as HIV-positive patients. On the other hand, detection of HIV/AIDS patients in a community is very important due to following them up with the diagnosis tests for all opportunistic infection especially toxoplasmosis.

Introduction

Toxoplasma gondii, as an obligate intracellular protozoan causes toxoplasmosis with a worldwide distribution. Toxoplasmosis is considered as one of the food-borne parasitic diseases because human can be infected through consumption of raw and undercooked meat especially from sheep harboring tissue cyst and/or after intake of food and water contaminated with oocysts (Bolton and

Robertson, 2016). The prevalence of *T. gondii* in cats from different regions of Iran is ranged from 1.2% to 89.2% (Rahimi et al., 2015). Toxoplasmosis has not usually clear symptoms in adults with competent immune system but it can cause severe symptoms in immunosuppressed patients or even death (Sonnevile et al., 2017).

One of the common infections in HIV/AIDS patients is

* Corresponding author. ✉ mojtaba.moghateli@gmail.com

To cite: Boughattas S., Someeh R., Ajamein V., Sadighi M., Namrodi J., Moghateli M. (2017). A case report of cerebral toxoplasmosis in an HIV-positive patient: risk of possible transmission through contaminated water/food. *Journal of Food Quality and Hazards Control*. 4: 32-34.

toxoplasmosis that can cause focal brain lesions, encephalitis, coma, and also death (Winstanley, 1995). However, the prevalence of toxoplasmosis in the mentioned patients are various because of differential geographical areas. It is more common in tropical regions than the cold and mountainous ones (Nissapatorn et al., 2003). We reported here the cerebral toxoplasmosis in an Iranian HIV-positive patient.

Case report

A 35-year-old woman was hospitalized at Golestan province, Northern Iran in summer 2016. She had dizziness, fever, and also headache. The patient was prescribed for drugs in order to pain relief, but after a few days she complained with more severe pain in the same region and then paralysis symptoms were appeared. The patient was asked about the life style, food consumption, and any communication with pets. Data showed that she had continuous contact with cats. Magnetic Resonance Imaging (MRI) revealed a small mass in the brain as illustrated in Figure 1. The complete blood count examination indicated hemoglobin of 12 g/dl, the total white blood cell count of $6.14 \times 10^3/L$, the total red blood cell count of $3.67 \times 10^6/L$, platelet count of $307 \times 10^3/L$, mean corpuscular volume count of 104.6 fl as well as mean corpuscular hemoglobin count of 32.7 pg. In previous analysis, she had shown the presence of HIV antigen using immunocytochemistry (data not shown). The results of serological tests for toxoplasmosis was performed for the patient that showed high levels of IgG (1785.6 mg/dl; with the reference positive range of more than 700-1600 mg/dl) and IgM (162.4 IU/ml, with the reference positive range of more than 40-230 IU/ml). During her hospitalization, she was prescribed by pyrimethamine (25 mg/TDS), alongside with sulfadiazine (500 mg/TDS), as well as folic acid with dosage of 15 mg/TDS.

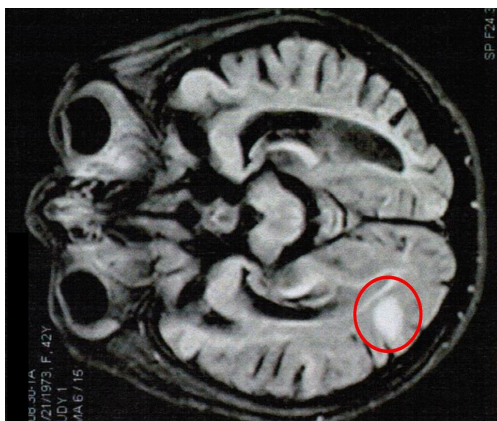


Figure 1: MRI shows a lesion in the brain

Discussion

In this study, we reported cerebral toxoplasmosis with severe symptoms in a 35-year-old woman with HIV in Golestan province. Jones et al. (1996) reported that cerebral toxoplasmosis in HIV infected patients are different in various geographical area. The prevalence of seropositive toxoplasmosis in HIV-positive patients is 10-40% in United States. It has been reported 49.7% among HIV-positive patients in Iran (Mohraz et al., 2011). Based on our knowledge, we have no reported prevalence of toxoplasmosis in HIV-patients in Golestan province, Northern Iran and therefore we consider it as the first report of cerebral toxoplasmosis in this area.

The most common studies have been shown the toxoplasma IgG antibodies in HIV-patients as the dominant antibodies. In our case, we also found toxoplasma IgG antibodies of 1785.6 mg/dl and toxoplasma IgM antibodies of 162.4 IU/ml. This result in comparison with the ones in Mexico (Galván Ramírez et al., 1997) as well as in India (Meisheri et al., 1997) shows that the most common clinical toxoplasmosis are resulted from reactivation latent infection.

In this studied patient woman, the MRI analysis showed mass effect and ring enhancement which is commonly characterized by swelling, edema, and mass effect on the surrounding structures, and inflammation. Although cerebral toxoplasmosis and tuberculoma are considered as diagnosis after the mentioned imaging especially in developing countries (Adurthi et al., 2010), diagnosis of toxoplasmosis is often difficult because of non-specificity of symptoms and signs such as fever. Fever is usually the earliest sign in HIV-positive patients. The studied case in this study also showed this sign. The high titer could be helpful for diagnosis. This case had high titer toxoplasma IgG antibodies. The prompt recognition of opportunistic infections in immunocompromised patients especially HIV-positive and also following treatment is the most economical viable options in developing countries (Adurthi et al., 2010). The routine diagnosis tests such as serological as well as immunological analysis and the imaging assessments such as MRI are considered to perform to these high risk patients.

Conclusion

From public health importance viewpoint, it is a necessity to educate the people about possible transmission risk of *T. gondii* through contaminated food and drink sources. Unhygienic behaviors such as close contact with stray cats and also consumption of raw or semi-cooked meat must be avoided especially in case of immunosuppressed persons such as HIV-positive patients. On the

other hand, detection of HIV/AIDS patients in a community is very important due to following them up with the diagnosis tests for all opportunistic infections especially toxoplasmosis.

Conflicts of interest

There is no conflict of interest.

Acknowledgements

No funding/support was present in this case report.

References

- Adurthi S., Mahadevan A., Bantwal R., Satishchandra P., Ramprasad S., Sridhar H., Shankar S.K., Nath A., Jayshree R.S. (2010). Utility of molecular and serodiagnostic tools in cerebral toxoplasmosis with and without tuberculous meningitis in AIDS patients: a study from South India. *Annals of Indian Academy of Neurology*. 13: 263-270.
- Bolton D.J., Robertson L.J. (2016). Mental health disorders associated with foodborne pathogens. *Journal of Food Protection*. 79: 2005-2017.
- Galván Ramírez M.D.L.L., Valdez Alvarado V., Vargas Gutierrez G., Jiménez González O., García Cosío C., Vielma Sandoval M. (1997). Prevalence of IgG and IgM anti-*Toxoplasma* antibodies in patients with HIV and acquired immunodeficiency syndrome (AIDS). *Revista da Sociedade Brasileira de Medicina Tropical*. 30: 465-467.
- Jones J.L., Hanson D.L., Chu S.Y., Ciesielski C.A., Kaplan J.E., Ward J.W., Navin T.R., Adult/Adolescent Spectrum of Disease Group (1996). Toxoplasmic encephalitis in HIV infected persons: risk factors and trends. *AIDS*. 10: 1393-1399.
- Meisheri Y.V., Mehta S., Patel U. (1997). A prospective study of seroprevalence of toxoplasmosis in general population, and in HIV/AIDS patients in Bombay, India. *Journal of Postgraduate Medicine*. 43: 93-97.
- Mohraz M., Mehrkhani F., Jam S., SeyedAlinaghi S., Sabzvari D., Fattahi F., Jabbari H., Hajiabdolbaghi M. (2011). Seroprevalence of toxoplasmosis in HIV⁺/AIDS patients in Iran. *Acta Medica Iranica*. 49: 213-218.
- Nissapatorn V., Lee C.K., Cho S.M., Rohela M., Anuar A.K., Quek K.F., Latt H.M. (2003). Toxoplasmosis in HIV/AIDS patients in Malaysia. *Southeast Asian Journal of Tropical Medicine and Public Health*. 57: 18-19.
- Rahimi M.T., Daryani A., Sarvi S., Shokri A., Ahmadvpour E., Teshnizi S.H., Mizani A., Sharif M. (2015). Cats and *Toxoplasma gondii*: a systematic review and meta-analysis in Iran. *Onderstepoort Journal of Veterinary Research*. 82: 1-10.
- Sonneville R., Magalhaes E., Meyfroidt G. (2017). Central nervous system infections in immunocompromised patients. *Current Opinion in Critical Care*. doi: 10.1097/MCC.0000000000000397.
- Winstanley P. (1995). Drug treatment of toxoplasmic encephalitis in acquired immunodeficiency syndrome. *Journal of Postgraduate Medical*. 71: 404-408.